PATENT COOPERATION TREATY

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PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Artcle 36 and Rule 70)

Applicant's or agent's file reference OPP030343KR	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. **PCT/KR2003/001271**	International filing date *(day/month/year)* **27 JUNE 2003 (27.06.2003)**	Priority date *(day/month/year)* 27 JUNE 2002 (27.06.2002)

International Patent Classification (IPC) or national classification and IPC

IPC7 C08G 77/06, H01L 21/31, H01L 23/58

Applicant

LG CHEM, LTD. et al

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demamd	Date of completion of this report
27 JANUARY 2004 (27.01.2004)	14 OCTOBER 2004 (14.10.2004)

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Form PCT/IPEA/409 (cover sheet) (July 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International aplication No.
PCT/KR2003/001271

I. Basis of the report

1. With regard to the elements of the international application:*

[X] the international application as originally filed

[ ] the description:
pages _____ , as originally filed
pages _____ , filed with the demand
pages _____ , filed with the letter of _____

[ ] the claims:
pages _____ , as originally filed
pages _____ , as amended (together with any statment) under Article 19
pages _____ , filed with the demand
pages _____ , filed with the letter of _____

[ ] the drawings:
pages _____ , as originally filed
pages _____ , filed with the demand
pages _____ , filed with the letter of _____

[ ] the sequence listing part of the description:
pages _____ , as originally filed
pages _____ , filed with the demand
pages _____ , filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language English which is

[ ] the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

[X] the language of publication of the international application(under Rule 48.3(b)).

[ ] the language of the translation furnished for the purposes of international preliminary examination(under Rules 55.2 and/ or 55.3).

3. With regard to any **nucleotide** and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

[ ] contained inthe international application in written form.

[ ] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readable form

[ ] The statement that the subsequently furnished written sequence listing does not go beyond the disc losure in the international applicationas as filed has been furinshed.

[ ] The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. [ ] The amendments have resulted in the cancellation of:

[ ] the description, pages _____

[ ] the claims, Nos. _____

[ ] the drawings, sheet _____

5. [ ] This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box(Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed." and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION

International aplication No.
PCT/KR2003/001271

V. **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	4-5	YES
	Claims	1-3, 6-10	NO
Inventive step (IS)	Claims	None	YES
	Claims	4-5	NO
Industrial applicability (IA)	Claims	1-10	YES
	Claims	None	NO

2. Citations and explanations (Rule 70.7)

Reference is made to the following document:

D1: US 2001/0055891 A1

I. Novelty

The present invention relates to an organosilicate polymer having superior coating, mechanical, and dielectric properties; a dielectric insulating film for a semiconductor; and more particularly a method for preparing an organosilicate polymer.
D1 relates to a low dielectric material essential for a semiconductor having high density and high performance of the next generation, and particularly to a process for preparing a porous interlayer insulating film.

Claim 1 of the present invention is the same as D1 in its method of manufacturing an organosilicate polymer by hydrolysis and condensation using a thermally decomposable organic compound that is capped with silane compounds at both its ends, a silane compound, water, and a catalyst.
The functional groups R1, R3 and R2, R4 combined in Si of chemical formula 1 of claims 2-3 dependent on claim 1 of the present invention are the same as the functional groups R3, R4 and Y, Z combined in Si of chemical formula 2 of D1; and a thermally decomposable organic substance L in chemical formula 1 of the present invention is the same as a thermally decomposable organic substance M of chemical formula 2 of D1.

Therefore, claims 1-3 are not novel over D1 under PCT Article 33(2).

Claim 6 relates to an organic silicate copolymer prepared in hydrolysis and condensation using an organic compound that is capped with silane compounds at both its ends, silane compounds, water and a catalyst, which is the same as organic silicate copolymer prepared using an organic compound that is capped with silane compounds at both its ends, silane compounds, water and a catalyst as disclosed in D1

Thherefore, claim 6 is not novel under PCT Article 33(2).
(Continued on Supplemental Box)

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of:

Box V.

Claim 7 relates to a coating composition for forming an insulating film comprising (a) a copolymer containing silane compound, a thermally decomposable organic silane compound, (b) organic solvent, which is the same as a coating composition of D1.

Therefore, claim 7 is not novel under PCT Article 33(2).

Claims 8-10 relate to a method of manufacturing a low dielectric insulating film, an insulating film made thereby, and a semiconductor device containing the above insulting film. Claim 8 is the same as D1 in the method of manufacturing a low dielectric insulating film comprising the steps of providing a coating solution composition including an organic compound that is capped with silane compounds at both its ends, a silane compound, and organic solvent; forming an insulating film with a coating solution; and drying and firing the coated insulating film. An insulating film and a semiconductor device containing said insulting film of claims 9-10 manufactured by the method of claim 8 are the same as an insulating film and a semiconductor device containing said insulting film of D1.

Therefore, claims 8-10 are not novel under PCT Article 33(2).

II. Inventive step

Claims 4 and 5 relate to a method of manufacturing an organosilicate polymer of claim 1, wherein silane compounds can be selected from a group consisting of compounds represented by the following chemical formula 2, chemical formula 3 and chemical formula 4.
Comparing chemical formula 2 of the present invention with a chemical formula 1 of D1, they are similar in that R5 of chemical formula 2 of the present invention is a hydrogen, fluorine, aryl, vinyl or fluorine-containing alkyl group and R6 is alkoxy group; and R1 and R2 of chemical formula 1 of D1 are hydrogen, alkyl containing fluorine, or aryl and X is alkoxy. Though they are different in that R6 of chemical formula 2 of the present invention includes hydroxyl group which is not included in chemical formula 1 of D1, a person skilled in the art can arbitrarily perform this substitution in a functional group and the effect thereof is not seen remarkable.

Therefore, claims 4-5 are not inventive under PCT Article 33(3).

III. Industrial Applicability

The subject matter of claims 1-10 is considered to be industrially applicable under PCT Article 33(4)